

## **REMARKS**

Claims 1, 3-6, 8-9 and 11-29 are currently pending in this application. Claims 2, 7 and 10 have been cancelled without prejudice.

The claims have been amended to provide articles in accordance with U.S. practice. Claims 1, 4, 8, 11, 12, 15 and 22 have also been further amended. Support for the amendments may be found throughout the specification, see, for example, page 2, second paragraph, page 6, third paragraph and FIGS. 2, 3A-4B. No new matter has been added.

Favorable reconsideration is respectfully requested.

### **I. Interview Summary**

Applicants kindly thank Examiners Geene and Shumate for the discussion of this application in the telephonic interview with Heidi Dare on June 14, 2010. No demonstration was given during the interview. Claim 15 and the van Rossen reference (WO 93/21812) were discussed. No agreement was reached during the interview. Applicants agreed to file an amendment.

### **II. Claim Objections**

#### **A. Claims 1, 3, 8, 9, 13 and 14**

Claims 1, 3, 8, 9, 13 and 14 are objected to as being unclear as to whether the phrase "has an average pore size smaller than 50  $\mu\text{m}$ " refers to the region or the nonwoven layer. Claims 1, 3, 8, 9, 13 and 14 are objected to as being unclear as to whether the phrase "comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layer is inhibited" refers to the region or the non-woven layer.

Claim 1 has been amended to clarify that the phrases "has an average pore size smaller than 50  $\mu\text{m}$ " and "comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layer is inhibited" refer to the region.

Therefore, Applicants respectfully request that objection to claims 1, 3, 8, 9, 13 and 14 be withdrawn.

**B. Claims 4-6 and 26**

Claims 4-6 and 26 are objected to as being unclear as to whether the phrase "has an average pore size smaller than 50  $\mu\text{m}$ " refers to the region or the nonwoven layer. Claims 4-6 and 26 are objected to as being unclear as to whether the phrase "comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layer is inhibited" refers to the region or the non-woven layer.

Claim 4 has been amended to clarify that the phrases "has an average pore size smaller than 50  $\mu\text{m}$ " and "comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layer is inhibited" refer to the region.

Therefore, Applicants respectfully request that the objections to claims 4-6 and 26 be withdrawn.

**C. Claims 11, 12 and 27**

Claims 11, 12 and 27 are objected to as being unclear as to whether the phrase "has an average pore size smaller than 50  $\mu\text{m}$ " refers to the region or the nonwoven layer. Claims 11, 12 and 27 are objected to as being unclear as to whether the phrase "comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layer is inhibited" refers to the region or the non-woven layer.

Claims 11 and 12 have been amended to clarify that the phrases "has an average pore size smaller than 50  $\mu\text{m}$ " and "comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layer is inhibited" refer to the region.

Therefore, Applicants respectfully request that objection to claims 11, 12 and 27 be withdrawn.

### **III. Claim Rejections under 35 U.S.C. §112**

#### **A. Claims 1, 3, 4-6, 8, 9, 13, 14 and 26**

Claims 1, 3, 4-6, 8, 9, 13, 14 and 26 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for the inclusion of the terms "predetermined area" and "predetermined thickness." Claims 1, 3, 4-6, 8, 9, 13, 14 and 26 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for reciting a filter and a vacuum cleaner bag.

Claims 1 and 4 have been amended to recite "Nonwoven layer for a filter for a vacuum cleaner bag."

Applicants have amended claims 1 and 4 to remove the terms "predetermined area" and "predetermined thickness." Claims 1 and 4 have been amended to remove the term "in particular" and to recite a "Nonwoven layer for a filter for a vacuum cleaner bag."

Therefore, Applicants respectfully request that the rejection of claims 1, 3, 4-6, 8, 9, 13, 14 and 26 under 35 U.S.C. §112, second paragraph, be withdrawn.

#### **B. Claims 15-21, 28 and 29**

Claims 15-21, 28 and 29 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for reciting a filter and a vacuum cleaner bag.

Claim 15 has been amended to remove the term "in particular" and to recite "Filter medium for a vacuum cleaner bag."

Therefore, Applicants respectfully request that the rejection of claims 15-21, 28 and 29 under 35 U.S.C. §112, second paragraph, be withdrawn.

#### **C. Claims 8 and 9**

Claims 8 and 9 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for insufficient antecedent basis for the term "layer."

Claim 8 has been amended to recite "in a direction parallel to a surface of the first layer or the second layer is inhibited."

Therefore, Applicants respectfully request that the rejection of claims 8 and 9 under 35 U.S.C. §112, second paragraph, be withdrawn.

#### **IV. Claim Rejections under 35 U.S.C. §102 and §103**

##### **A. Claims 4 and 5**

Claims 4 and 5 have been rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Schultink (EP 0 960 645 A2).

Applicants respectfully traverse the rejection of claims 4 and 5 based on Schultink.

Claims 4 and 5 are directed to a nonwoven layer for a filter for a vacuum cleaner bag that inhibits penetration of the filter material by elongated particles during use of the vacuum cleaner bag while maintaining high filtration efficiency for the overall bag. Claim 4 has been amended to recite that the non-woven layer comprises at least one region having a surface area smaller than the filter. The region having the smaller surface area further comprises an average pore size smaller than 50  $\mu\text{m}$ . Elongated particles, such as hairs, do not pierce the smaller surface area of the non-woven layer in the region.

Schultink is directed to a disposable vacuum filter bag constructed of layers which include a high-air-permeability first layer positioned upstream in the direction of air flow of a second filtration layer. (Abstract.) However, Schultink fails to teach or suggest that either of the first or the second layers includes a region having a surface area smaller than the filter and further that the region having the smaller surface area comprises an average pore size smaller than 50  $\mu\text{m}$ . The layers discussed and shown in Schultink are depicted as having the same size.

Ward (Micro Denier Nonwoven Process and Fabrics), Webster's Third New International Dictionary, Unabridged 1993, and Arnold (U.S. 5,707,468) have all been cited in support of the Examiner's position that the spunbond layer comprises fibers being bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the layers is inhibited. Discussion of these references has been rendered moot in light of Applicants' amendment to claim 4.

In contrast, Applicants' claim 4 recites that the non-woven layer comprises at least one region having a surface area smaller than the filter. Claim 4 further recites

that the region having the smaller surface area further comprises an average pore size smaller than 50  $\mu\text{m}$ .

Therefore, Applicants respectfully request that the rejection of claims 4 and 5 under 35 U.S.C. §102(b) or in the alternative 35 U.S.C. §103(a) be withdrawn.

**B. Claim 1**

Claim 1 has been rejected under 35 U.S.C. §103(a) as being obvious over Schultink in view of Chand et al. (Structure and properties of polypropylene fibers during thermal bonding, *Thermochimica Acta* 367-368 (2001) 155-160) as evidenced by Ward, Webster's Third New International Dictionary and Arnold.

Applicants respectfully traverse the rejection of claim 1 based on Schultink in view of Chand.

Claim 1 has been amended to recite that the non-woven layer comprises at least one region having a surface area smaller than the filter. The region having the smaller surface area further comprises an average pore size smaller than 50  $\mu\text{m}$ .

Schultink has been discussed above and fails to teach or suggest that either of the first or the second layers includes a region having a surface area smaller than the filter and further that the region having the smaller surface area comprises an average pore size smaller than 50  $\mu\text{m}$ . Similarly a discussion of Ward, Webster's and Arnold has been rendered moot in light of the amendment to claim 1.

As acknowledged by the Examiner, Schultink fails to teach or suggest that at least one region is a hot calendered region. Chand has been cited for teaching thermal bonding. However, Chand fails to make up the deficiencies of Schultink. Chand also fails to teach or suggest a non-woven layer comprising at least one region having a surface area smaller than the filter and further that the region having the smaller surface area comprises an average pore size smaller than 50  $\mu\text{m}$ .

In contrast, Applicants' claim 1 recites that the non-woven layer comprises at least one region having a surface area smaller than the filter. Claim 1 further recites that the region having the smaller surface area further comprises an average pore size smaller than 50  $\mu\text{m}$ .

Therefore, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

**C. Claim 3**

Claim 3 has been rejected under 35 U.S.C. §103(a) as being obvious over Schultink in view of Chand as evidenced by Ward, Webster's Third New International Dictionary and Arnold as applied to claim 1 above and further in view of Johnson et al. (U.S. 4,877,526) and in view of Ando et al. (U.S. 5,206,061).

Applicants respectfully traverse the rejection of claim 3 based on Schultink in view of Chand and further in view of Johnson and in view of Ando.

Claim 3 requires that the non-woven layer comprises at least one region having a surface area smaller than the filter. The region having the smaller surface area further comprises an average pore size smaller than 50  $\mu\text{m}$ .

Schultink and Chand have been discussed above with respect to claim 1 and fail to teach or suggest every element of claim 1. Similarly a discussion of Ward, Webster's and Arnold has been rendered moot in light of the amendment to claim 1.

According to the Examiner, Schultink fails to teach or suggest a spunbond nonwoven layer having a basis weight between 10 and 100 g/m<sup>2</sup> and an average fineness of 0.6-12 denier. Johnson has been cited as having a spunbond, pin-bonded polypropylene fabric forming the cover of the sleeve having a basis weight of approximately 34 g/m<sup>2</sup>. Ando has been cited as disclosing a spunbonded non-woven fabric and wherein the mean fineness of the fibers of the non-woven fabric is 10 denier or less.

Johnson is directed to a flexible filter bag having a sleeve of a length about twice that of the tube. (Abstract.) However, Johnson fails to teach or suggest a non-woven layer comprising at least one region having a surface area smaller than the filter and further that the region having the smaller surface area comprises an average pore size smaller than 50  $\mu\text{m}$ .

Ando is directed to a dust-proof head gear. (Abstract.) The headgear 1 is made from an electret non-woven fabric 2. (Col. 2, lines 52-54.) However, Ando fails to teach or suggest a non-woven layer comprising at least one region having a surface area

smaller than the filter and further that the region having the smaller surface area comprises an average pore size smaller than 50  $\mu\text{m}$ .

Johnson and Ando fail to make up the deficiencies of Schultink and Chand. Even assuming that a nonwoven layer having a basis weight between 10 and 100  $\text{g/m}^2$  and an average fineness of 0.6-12 denier is well known in the art is true and accurate, that alone does not provide any motivation to modify Schultink's nonwoven layer as suggested by the Examiner. Although helpful insights need not become "rigid and mandatory formulas" such as the TSM test, the Supreme Court emphasized that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416, 418-19 (2007). The Supreme Court also cautioned that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *Id.* at 421 (citing *Graham*, 383 U.S. at 36). A nonwoven layer having a basis weight between 10 and 100  $\text{g/m}^2$  and an average fineness of 0.6-12 denier merely being well known in the art would not have prompted a person of ordinary skill in the art to combine the layers of Johnson and Ando with Schultink and Chand's filters in the way that claim 3 does.

Therefore, Applicants respectfully request that the rejection of claim 3 under 35 U.S.C. §103(a) be withdrawn.

#### **D. Claim 6**

Claim 6 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as applied to claims 4 and 5 above and further in view of Ohue et al. (U.S. 4,663,222).

Applicants respectfully traverse the rejection of claim 6 as being unpatentable over Schultink in view of Ohue.

Schultink has been discussed above with respect to claim 4 from which claim 6 ultimately depends. Ohue has been cited for disclosing the application of a hotmelt adhesive. Ohue is directed to a water-repellant nonwoven fabric made of a melt-blown

fiber. (Abstract.) Ohue fails to make up the deficiencies of Schultink. Schultink and Ohue, individually or in combination, fail to teach or suggest all the limitations of claim 6.

Therefore, Applicants respectfully request that the rejection of claim 6 under 35 U.S.C. §103(a) be withdrawn.

**E. Claims 1, 3, 8, 9, 13 and 14**

Claims 1, 3, 8, 9, 13 and 14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen (WO/93/21812) in view of Johnson, Ando, Schultink, Chand and Fesco (U.S. 3,498,031) as evidenced by Ward and Webster's.

Applicants respectfully traverse the rejection of claims 1, 3, 8, 9, 13 and 14 as being unpatentable over van Rossen in view of Johnson, Ando, Schultink, Chand and Fesco as evidenced by Ward and Webster's.

Independent claims 1 and 3 have been amended to recite that the non-woven layer comprises at least one region having a surface area smaller than the filter. The region having the smaller surface area further comprises an average pore size smaller than 50  $\mu\text{m}$ .

van Rossen is directed to a dust bag 60 having a protective layer strip 48 through the filter bag. (Abstract.) As acknowledged by the Examiner on page 21 of the January 15, 2010 Office Action, van Rossen fails to teach or suggest a nonwoven layer having an average pore size smaller than 50  $\mu\text{m}$ . In addition, van Rossen fails to teach or suggest that the region having a surface area smaller than the filter comprises an average pore size smaller than 50  $\mu\text{m}$ .

Johnson has been cited by the Examiner for disclosing an equivalent pore size of about 20  $\mu\text{m}$ . Johnson has been discussed above and also fails to teach or suggest a region having a surface area smaller than the filter that comprises an average pore size smaller than 50  $\mu\text{m}$ .

Fesco has been cited by the Examiner for disclosing a filter bag with a strip 14 that is applied to the material 10 with adhesive strips 16. However, Fesco fails to teach or suggest a region having a surface area smaller than the filter and comprising an average pore size smaller than 50  $\mu\text{m}$ .



Similarly, Schultink, Ando and Chand have all been discussed above and also fail to teach or suggest a region having a surface area smaller than the filter and comprises an average pore size smaller than 50  $\mu\text{m}$ . Similarly a discussion of Ward, Webster's and Arnold has been rendered moot in light of the amendment to claim 1.

In addition, as discussed above, the Supreme Court cautioned that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *Id.* at 421 (citing *Graham*, 383 U.S. at 36). The Examiner's reliance on six separate references suggests that the Examiner is relying upon hindsight, having knowledge of the Applicant's own disclosure. But for this knowledge, the combination of the references would not have occurred to the Examiner. Thus, combining these references is improper.

Therefore, Applicants respectfully request that the rejection of claims 1, 3, 8, 9, 13 and 14 under 35 U.S.C. §103(a) be withdrawn.

#### **F. Claim 11**

Claim 11 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as evidenced by Ward, Webster's, Arnold and Diehl et al. (U.S. 6,425,978).

Applicants respectfully traverse the rejection of claim 11 as being unpatentable over Schultink.

Claim 11 has been amended to recite treating at least one region of the nonwoven layer, the treated region having a smaller surface area than the filter, such that the treated region has an average pore size smaller than 50  $\mu\text{m}$ .

Schultink has been discussed above and fails to teach or suggest a method of treating a region of the non-woven layer that has a smaller surface area than the filter. Schultink also fails to teach or suggest that the treated region has an average pore size smaller than 50  $\mu\text{m}$ .

Diehl has been cited as evidence of a latex binder for nonwoven fibers. However, Diehl fails to make up the deficiencies of Schultink. A discussion of Ward, Webster's and Arnold has been rendered moot in light of the amendment to claim 11.

Therefore, Applicants respectfully request that the rejection of claim 11 under 35 U.S.C. §103(a) be withdrawn.

### **G. Claim 12**

Claim 12 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink in view of Arnold as evidenced by Ward and Webster's.

Applicants respectfully traverse the rejection of claim 12 as being unpatentable over Schultink.

Claim 12 has been amended to recite treating at least one region of the nonwoven layer, the treated region having a smaller surface area than the filter, such that the treated region has an average pore size smaller than 50  $\mu\text{m}$ .

Schultink, Arnold, Ward and Webster's have been discussed above and fail to teach or suggest all the elements of claim 12.

Therefore, Applicants respectfully request that the rejection of claim 12 under 35 U.S.C. §103(a) be withdrawn.

### **H. Claims 15-19 and 22-25**

Claims 15-19 and 22-25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen.

Applicants respectfully traverse the rejection of claims 15-19 and 22-25 as being unpatentable over van Rossen.

Claims 15 and 22 recite a filter paper layer defining a first region having a smaller surface area than the filter structure, the filter paper layer at the first region having reduced air permeability relative to a second region of the filter structure free of the filter paper layer.

van Rossen is directed to a dust bag 60 comprising a filter bag having a protective layer strip 48 through the filter bag. (van Rossen, Abstract.) The protective layer strip consists of air-permeable material having an air permeability considerably higher (for example, at least by the factor 10) than the permeability to air of the actual filter material that forms the dust bag. (Page 3, lines 7-11.) As described by van Rossen, "Due to the high permeability to air of the protective layer insert 38 that is considerably higher than that of the fiber composite of the filter bag 28, the fluidic properties of the dust bag 16 are not impaired. (Page 8, lines 4-8.) Additionally, van Rossen describes the relationship between the protective layer and the filter bag as

follows: "The permeability to air and the pressure drop of the dust bag are not compromised since the material of the protective layer is highly permeable to air when compared to the permeability to air of the remaining material of the filter bag." (Page 11, lines 24-29.) Since van Rossen teaches that the protective layer has a higher air permeability than the bag itself, Applicants respectfully assert that van Rossen should be considered as teaching away from providing a layer having a reduced air flow. Further, one skilled in the art would not be motivated to provide a filter paper layer for the protective layer in van Rossen as suggested by the Examiner as the filter paper would not provide higher air permeability than either a filter paper bag layer or a nonwoven filter bag. van Rossen fails to teach or suggest a filter paper layer at the first region having reduced air permeability relative to a second region of the filter structure free of the filter paper layer.

Therefore, Applicants respectfully request that the rejection of claims 15-19 and 22-25 under 35 U.S.C. §103(a) be withdrawn.

**I. Claims 21, 28 and 29**

Claims 21, 28 and 29 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen as applied to claims 15-19 and 22-25 above and further in view of Schultink.

Applicants respectfully traverse the rejection of claims 21, 28 and 29 as being unpatentable over van Rossen in view of Schultink.

van Rossen has been discussed above with respect to claim 15 from which claims 21, 28 and 29 ultimately depend and fails to teach or suggest a filter paper layer at the first region having reduced air permeability relative to a second region of the filter structure free of the filter paper layer.

Schultink has also been discussed above. As previously acknowledged by the Examiner in the Office Action dated May 21, 2009, page 10, Schultink fails to teach or suggest a filter paper having a surface area smaller than the filter structure. Schultink further fails to teach or suggest that the smaller surface area filter paper has a reduced air permeability relative to a second region of the filter structure free of the filter paper. Schultink fails to make up the deficiencies of van Rossen. van Rossen and Schultink,

individually or in combination, fail to teach or suggest all the limitations of claims 21, 28 and 29.

Therefore, Applicants respectfully request that the rejection of claims 21, 28 and 29 under 35 U.S.C. §103(a) be withdrawn.

**J. Claim 20**

Claim 20 has been rejected under 35 U.S.C. §103(a) as being unpatentable over the CAPFIL 50 vacuum cleaner bag in view of van Rossen.

Applicants respectfully traverse the rejection of claim 20 as being unpatentable over the CAPAFIL 50 vacuum cleaner bag in view of van Rossen.

van Rossen has been discussed above with respect to claim 15 from which claim 20 depends and fails to teach or suggest a filter paper layer at the first region having reduced air permeability relative to a second region of the filter structure free of the filter paper layer. van Rossen and the CAPAFIL 50 vacuum cleaner bag, individually or in combination, fail to teach or suggest all the limitations of claim 20.

Therefore, Applicants respectfully request that the rejection of claim 20 under 35 U.S.C. §103(a) be withdrawn.

**K. Claim 26**

Claim 26 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink in view of Lutz et al. (Polypropylene: An A-Z Reference).

Applicants respectfully traverse the rejection of claim 26 as being unpatentable over Schultink in view of Lutz.

Schultink has been discussed above with respect to claim 4 from which claim 26 depends. Lutz has been cited for disclosing pulverized polymer. Lutz fails to make up the deficiencies of Schultink. Schultink and Lutz, individually or in combination, fail to teach or suggest all the limitations of claim 26.

Therefore, Applicants respectfully request that the rejection of claim 26 under 35 U.S.C. §103(a) be withdrawn.

**L. Claim 27**

Claim 27 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as evidenced by Ward, Webster's, Arnold and Diehl as applied to claim 11 and further in view of Lutz.

Applicants respectfully traverse the rejection of claim 27 as being unpatentable over Schultink in view of Lutz.

Schultink has been discussed above with respect to claim 11 from which claim 27 depends. Lutz has been cited for disclosing pulverized polymer. Lutz fails to make up the deficiencies of Schultink. Schultink and Lutz, individually or in combination, fail to teach or suggest all the limitations of claim 27.

Therefore, Applicants respectfully request that the rejection of claim 27 under 35 U.S.C. §103(a) be withdrawn.

**V. Summary**

Applicants respectfully assert that the claims are in condition for allowance. Allowance of the claims is earnestly solicited. Should the Examiner wish to discuss any of the above submissions in more detail, the Examiner is asked to please call the undersigned at the telephone number listed below.

Respectfully submitted,



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Dated: June 15, 2010

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